



INTRODUCTION

In 1982, representatives of eight national and international space agencies met to form the Consultative Committee for Space Data Systems (CCSDS). Since then, the CCSDS has been actively developing data- and information-systems recommendations to: a) promote interoperability and cross support among cooperating space agencies, b) reduce the cost to the various agencies of performing common data functions by eliminating unjustified project-unique design and development.

TYPES OF CCSDS PUBLICATIONS

The basic product of the CCSDS organization is the "Blue Book" Recommendation. These documents are not standards, but are intended to serve as baseline documents for the applicable standards of the member agencies. Approval of a Blue Book by an agency constitutes an agreement by that agency not to adopt any standard for interagency cross-support which is in conflict with the CCSDS Recommendation. CCSDS issues several different kinds of publications in a progression leading toward consensus. The starting point in the cycle generally is a concept paper, which may be submitted by any agency to one of the CCSDS Panels to suggest a new work item for CCSDS. It may then be drafted as a White Book and circulated to the appropriate membership. After technical consensus has been reached within the CCSDS, the document may be re-issued as a Red Book (draft Recommendation) and circulated to the Member and Observing Agencies and to the CCSDS Associates for review. A Red Book may go through more than one issue before it obtains concurrence by the participating agencies. When this is achieved, the Red Book is submitted to the Management Council for final approval; if approved, the Recommendation becomes a CCSDS Blue Book Recommendation.

Throughout the review process, consensus (among the Member Agencies, with consideration of the viewpoints of Observers and Associates) is the mechanism used to achieve agreement.

In addition to the White/Red/Blue series of books, CCSDS publishes Administrative Reports (internal procedures, minutes, etc.) as Yellow Books and Technical Reports as Green Books. Usually issued as a companion document to a Blue Book, a Green Book provides tutorial material, performance estimates, and a rationale for the choices that were made in the Blue Book Recommendation.

CCSDS Recommendations and other documents are also available in electronic form on-line at the below internet address.

CCSDS Recommendations are required to be reexamined and reaffirmed, revised, or withdrawn after no more than five years, and more often if needed.

POINTS OF CONTACT

The CCSDS Secretariat provides overall coordination and support including the publication and distribution of CCSDS products and the maintenance of CCSDS membership lists.

The CCSDS Secretariat can be contacted at:

CCSDS Secretariat
NASA Headquarters, Code OI
Washington, DC 20546
Email: JRUSH@qmgate.osc.hq.nasa.gov
Telex: 4979843 NASA WSH
Fax: +1 202 358-3520

Specific CCSDS documents or related material as hard copy can be obtained from:

NASA Goddard Space Flight Center
Aerospace Data Standards Office - Code 730.4
Greenbelt, MD 20771
Email: William.B.Poland@gsfc.nasa.gov
Voice: +1 301 286-8592 Fax: +1 301 286-1783

On-line CCSDS documents can be down-loaded from the following World-Wide Web site:

<http://joy.gsfc.nasa.gov/CCSDS-DocLib.html>

CCSDS ORGANIZATION

The overall control of the CCSDS is vested in the Management Council (MC). Each Member Agency is entitled to a seat on the MC, which reviews the technical program of work being performed by the technical panels and authorizes the publication and distribution of the various CCSDS books after full consensus has been reached among the Member Agencies. The MC is assisted in its day-to-day running of the CCSDS by the Secretariat (currently assigned to NASA), which performs the administrative functions associated with CCSDS operations, and by the Technical Steering Group (chaired by ESA), which advises the MC on technical matters and ensures that the technical panels are properly synchronized. The actual technical work is performed within technical panels and subpanels of the CCSDS organization. Figure 1 illustrates the current CCSDS organization.

CCSDS Panel 1 is concerned with protocol and interface Recommendations for data/information transferred between a spacecraft and either a ground acquisition/tracking station or another spacecraft. Its principal Recommendations are for:

1. Radio Frequency (RF) and modulation techniques
2. Telemetry systems
3. Telecommand systems
4. Error control over the space-to-ground link

CCSDS Panel 2 addresses the issue of defining data sets in such a way that a subsequent user, perhaps decades after a data set was created, can access the data set and independently deduce the syntax and the semantics of the data set.

The concept involves the construction of data sets as Standard Formatted Data Units (SFDUs). Each SFDU is a self-documenting data set.

CCSDS Panel 3 is the "Systems Panel" and is concerned with developing the protocols and standard interface specifications that would permit operational control and cooperation among two or more agencies participating in a joint space venture.

CCSDS Panel 4 (no longer active) developed a CCSDS Recommendation on Radiometric and Orbit Data that provides common definitions for tracking and orbit data.

PARTICIPATION IN THE CCSDS

In addition to a number of national space agencies which are full members of the CCSDS, many other organizations have joined as Observers or Associates; there is also a Liaison membership category:

- Observer status permits attendance at meetings but precludes voting privileges in the management and technical forums;

- Associate status provides opportunity to comment on draft CCSDS Recommendations circulated for review. Associates must be sponsored by an appropriate member agency. An associate may attend CCSDS meetings if specifically invited by the sponsor;

- Liaison status is open to non-commercial, standards-developing organizations similar to CCSDS. This category of membership is intended to ensure reciprocity with regard to sharing information and status of current activities between the Liaison Organization and CCSDS.

The CCSDS membership rules and management procedures are described in detail in the PROCEDURES MANUAL, CCSDS A00.0-Y-5, May 1992 (or the latest edition), and an up-to-date list of Associates is included as an annex to the MANUAL.

Excerpts from the MANUAL concerning the numbering system and color coding of CCSDS documents are listed on the last page of this brochure.

CCSDS MEMBER AGENCIES

- British National Space Centre (BNSC)/United Kingdom.
- Canadian Space Agency (CSA)/Canada.
- Central Research Institute of Machine Building (TsNIIMash)/Russian Federation.
- Centre National d'Etudes Spatiales (CNES)/France.
- Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V. (DLR)/Germany.
- European Space Agency (ESA)/Europe.
- Instituto Nacional de Pesquisas Espaciais (INPE)/Brazil.
- National Aeronautics and Space Administration (NASA HQ)/USA.
- National Space Development Agency of Japan (NASDA)/Japan.

CCSDS OBSERVER AGENCIES

- Australian Space Office (ASO)/Australia.
- Austrian Space Agency (ASA)/Austria.
- Belgian Science Policy Office (SPO)/Belgium.
- Centro Tecnico Aeroespacial (CTA)/Brazil.
- Chinese Academy of Space Technology (CAST)/China.
- Communications Research Laboratory (CRL)/Japan.
- Danish Space Research Institute (DSRI)/Denmark.
- European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)/Europe.
- European Telecommunications Satellite Organization (EUTELSAT)/Europe.
- Hellenic National Space Committee (HNSC)/Greece.
- Indian Space Research Organization (ISRO)/India.
- Industry Canada/Communications Research Center (CRC)/Canada.
- Institute of Space and Astronautical Science (ISAS)/Japan.
- Institute of Space Research (IKI)/Russian Federation.
- KFKI Research Institute for Particle & Nuclear Physics (KFKI)/Hungary.
- MIKOMTEK: CSIR (CSIR)/Republic of South Africa.
- Ministry of Communications (MOC)/Israel.
- National Oceanic & Atmospheric Administration (NOAA)/USA.
- Swedish Space Corporation (SSC)/Sweden.
- United States Geological Survey (USGS)/USA.

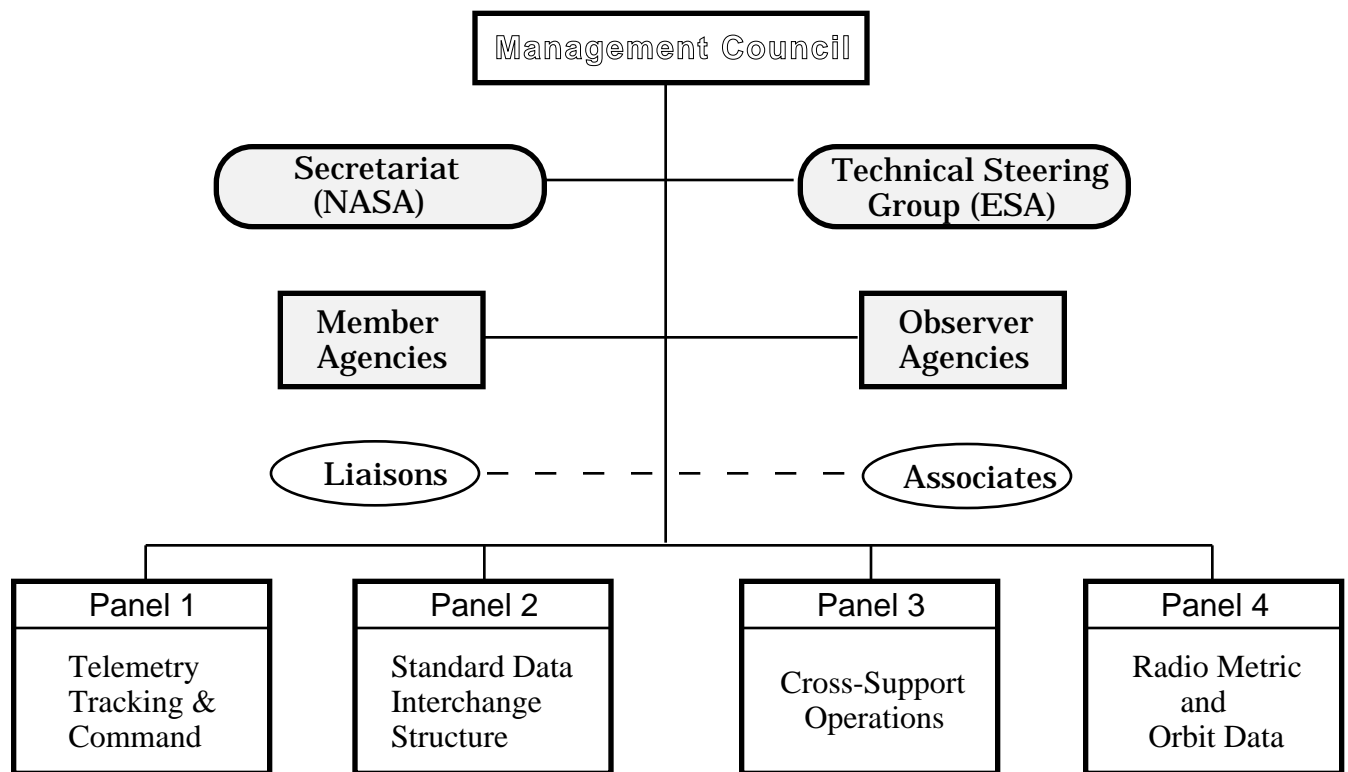


Figure 1 CCSDS Organization

EXCERPT FROM THE PROCEDURES MANUAL

CCSDS A00.0-Y-5

DOCUMENT NUMBERING SYSTEM

CCSDS documents shall be numbered in accordance with the following system:

CCSDS PXX.V-C-I-r , where:

- P:** is a single character identifier designating a specific topic area. P-assignments are made by the Management Council. Normally, a specific topic area is addressed by one CCSDS technical Panel.
- XX:** is a double character identifier designating a related major sub-topic. XX-assignments are made by the Panel Chair.
- V:** is a single character identifier designating a related minor sub-topic. V-assignments are made by the Panel Chair.
- C:** is a single character designating the status and nature of the document. It must be one of the following:
- W White Book -- Technical Document under development
 - R Red Book -- Draft Recommendation
 - B Blue Book -- Final Recommendation
 - G Green Book -- Technical Report
 - Y Yellow Book -- Administrative or Meeting Report
 - P Pink Sheets Q Pink Book -- Proposed Revised Recommendation
- I:** is a single character designating the Issue Number of the document. All versions of a document leading up to the initial Blue Book shall be numbered "0". When the document is initially released as a Blue Book it shall be identified as Issue I; for the subsequent approved revisions of a Blue Book, the previous I-value will be incremented by one.
- r:** is an internal control mechanism for tracking document revisions which occur between issue numbers. It is included only in Pink Books/Sheets.

Panels may develop White Books, draft Pink Sheets or draft Pink Books under their own authority; however, the Management Council must authorize the publication of any Red, Green, Pink or Blue Books or Pink Sheets.

The currently **assigned P-designators** are given below:

- 1 - Telemetry Systems
 - 2 - Telecommand Systems
 - 3 - Ancillary Data System
 - 4 - RF and Modulation Systems
 - 5 - Tracking and Navigation Systems
 - 6 - Information Access and Interchange Systems
 - 7 - Advanced Orbiting Systems
 - 8 - Ground Network and Communications Systems
 - 9 - Cross Support Concepts, Services and Architecture
- A - Administrative and Organizational Reports
B - Meeting Reports and Summaries
C - Panel Workshop Reports and Summaries
D - Technical Planning Reports and Summaries